DEVELOPING CORRESPONDENCE BETWEEN THE VERBAL AND ACTUAL BEHAVIOR OF STAFFMEMBERS AND CHANGING THEIR ACTUAL BEHAVIOR BY MANIPULATING THEIR VERBAL BEHAVIOR

An abstract of a Thesis by
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The problem. This study investigated changing hospital staff's frequency of actual interactions with residents by manipulating the staff's planning estimate of interactions.

Procedure. In a hospital for the developmentally handicapped, the interactions between two staff and four residents were coded by a supervisor as following appropriate, inappropriate, or neutral resident behavior. The staff gave the supervisor planning and reporting estimates of their interactions which followed appropriate resident behavior. After Baseline, the supervisor's approval was given at different times for high or low planning or correspondence between high planning and actual behavior.

Findings. The data from this study indicated that a change in the frequency of actual interactions could be made by manipulating the planning estimate alone, but only after correspondence had been established between the frequencies of actual interactions and the planning estimates.

Conclusions. After developing correspondence between verbal and actual behaviors, the staff's actual behavior can be changed by manipulating their verbal behavior.

Recommendations. Supervisors in hospitals for the developmentally handicapped might establish procedures to develop correspondence between the staff's verbal and actual behaviors so that, after training, changes in actual behavior could be produced by altering planning behavior.

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INTRODUCTION

It is often the responsibility of supervisors in hospitals for the developmentally handicapped to change the ways in which staff interact with residents. With the increased understanding of the effect of staff attention on resident behavior, supervisors often try to increase the frequency with which staff systematically follow appropriate resident behavior (e.g., bed making, brushing teeth, being polite) with positive consequences (e.g., staff attention) and decrease the frequency with which staff inadvertently follow inappropriate behavior with attention. Since time constraints often prevent direct observation of the staff's actual behavior, supervisors sometimes attend to a more easily accessible behavior, the staff's verbal description of their actual behavior.

One strategy sometimes used by supervisors who are dissatisfied with the staff's verbal report of actual behavior is to verbally prompt the staff to change their behavior in the future. This is often not an effective strategy since supervisors might change the staff's verbal reports without necessarily changing the actual performance.

Lovaas (1961, 1964) and Sherman (1964) reinforced preschool children's verbal behaviors related to certain of their non-verbal behaviors and found a slight increase in

the frequency of both the related verbal behaviors and the non-verbal behaviors. On the other hand, Risley and Hart (1968) found that reinforcing preschool children's verbal descriptions of what they had done did not initially change what they actually did in later sessions. When reinforcement was subsequently contingent upon agreement, or correspondence, between the verbal report of a behavior and the actual occurrence of the behavior, the children achieved correspondence by increasing the frequency of the actual behavior when the behavior was simple (e.g., using blocks) and by decreasing the frequency of the verbal description when the behavior was complex (e.g., painting). After the children developed correspondence between their actual behaviors and related verbal behaviors (reporting what they had done), providing reinforcement contingent upon a new verbal behavior alone was sufficient to increase the related actual behavior. Risley and Hart offered the explanation that the children were under the control of the stimulus of differential reinforcement for verbal behavior which occurred during previous sessions.

Studies investigating the effect of a point system on college students' planned, reported, and actual studying showed that changing the number of minutes students planned or reported studying did not initially change the actual number of minutes of studying. When points were contingent upon correspondence between the number of minutes students

planned or reported studying and the actual number of minutes of studying, all students moved toward correspondence, but some achieved correspondence by changing the number of minutes they actually studied while keeping the number of minutes they planned or reported studying the same, and others achieved correspondence by changing the number of minutes they planned or reported studying while keeping the number of minutes of actual studying the same (Sowers, Note 1).

The purpose of this study is to investigate whether a supervisor in a hospital for the developmentally handicapped might be able to change the staff's actual behaviors solely through praising changes in the staff's verbal planning behavior following a period of reinforcement of correspondence between the staff's verbal behaviors and their actual behaviors.

It was unclear at this point whether a description of what a staffmember planned to do would correlate better or worse with actual behavior than descriptions of what the staffmember did. For this reason collateral data on staff reporting were also collected.

Chapter 2

METHOD

Subjects

Subjects for the study were two female Child Development Workers (CDWs) who worked on a token economy unit at Woodward State Hospital-School. CDW selection was made on the basis of convenience of scheduled off-duty days, vacations, and holidays. One CDW was chosen from the AM shift and one from the PM shift. The PM shift CDW had successfully completed a formal 25-hour, five-week, inservice course in the principles and techniques of behavior modification taught by the author. Both CDWs had been informally instructed by the author in behavioral techniques on the token economy, watched other staff conducting projects in behavior modification, and conducted projects of their own. CDWs were on-duty eight hours, five days per week and had frequent opportunities to interact with the residents outside of the observed sessions.

Sessions

Sessions were conducted in the morning with CDW-1 and in the afternoon with CDW-2 five times per week. At the beginning of the session the CDW called four pre-selected residents to the table for structured activities, including coloring, making puzzles, pasting pictures, cutting out pictures, and making seasonal decorations for the living

area. The same four residents participated in the AM and PM sessions. Sessions lasted approximately 20 minutes.

Observation Procedures

An observer stationed himself near the table and coded the CDWs' interactions with residents, according to whether they immediately followed (within one second) appropriate, neutral, or inappropriate resident behaviors. The first sixty interactions were recorded in each session throughout all experimental conditions.

Additionally, the observer sampled each of the four resident's behavior at one minute intervals. A tape recording which produced a signal at 15 second intervals was used, and at the signal one resident's behavior was observed and classified as appropriate, neutral, or inappropriate. At the next signal the next resident's behavior was observed and classified. The observer continued around the table to the next resident at the end of each successive interval, beginning again when each resident's behavior had been sampled.

Reliability

Reliability measures were taken by an independent observer who had been trained during baseline conditions to a level of 80% agreement with the primary observer on the CDWs' actual behavior, and to 60% agreement on the time sample of the residents' behaviors. This low reliability

figure on the sample of the residents' behaviors was at least partly a function of the priority placed on observing the CDWs' interactions: should a CDW interaction occur at the moment of the signal to observe a resident, the observers were to record the CDW's behavior, then look at the resident and record her behavior. Variations in the length of time to record a response may have caused the observers to make their observations at different times.

Experimental Conditions

Baseline (B/L). The CDWs were instructed to conduct structured activities as usual.

Classifications of resident behavior (C). The CDWs were given a list of appropriate, neutral, and inappropriate behaviors exhibited by the residents during the structured activities sessions. Prior to each structured activities session in this and all subsequent experimental conditions, the observer briefly reviewed the list with the CDWs and discussed additions or modifications so that the observer and the CDWs were in agreement on the classifications.

Planning and reporting estimates (PE/RE). After ten verbal interactions with the residents at the beginning of each session, the CDWs were asked to estimate (plan) in writing, the number of verbal interactions in their next fifty verbal interactions which would follow appropriate resident behavior. After fifty verbal interactions had occurred the CDWs were asked to estimate (report) in

writing, the number of verbal interactions in the past fifty verbal interactions which had followed appropriate resident behavior. Estimates of planned and reported interactions were made by CDWs each day until the end of the study.

Feedback on actual interactions (FB). Immediately after reporting the number of interactions, the CDWs were told how many of their first fifty interactions with residents had actually followed appropriate resident behavior.

High Planning (HP). Observer approval was immediately contingent upon planning more than 13 interactions over the mean of actual interactions in Planning and Reporting Estimates 2. CDWs were not given feedback on their actual behavior at the end of the session.

High planning and correspondence (HPC). Observer approval was contingent upon high planning estimates as in the previous condition. After fifty interactions the CDWs were told if the actual frequency of their interactions was approaching their planning estimate or if it were not. Observer approval was contingent upon correspondence +3 interactions between the planning estimate and the actual frequency of interactions following appropriate resident behavior.

Low planning (LP). Observer approval was contingent upon planning to have the mean number of actual interactions (+3) in Planning and Reporting Estimates 2. The CDWs were not given feedback on their actual behavior at the end of the session.

Chapter 3

RESULTS

Figures 1 and 2 show the frequencies of interactions following appropriate resident behaviors and of planning and reporting estimates of the frequencies of those interactions in each experimental condition for both CDWs. The pattern of behavior was very similar for both CDWs, but CDW-2 showed roughly twice as many interactions following appropriate resident behavior. No trend was observed in the frequency of actual interactions following appropriate resident behavior in the first three conditions, Baseline, Classifications, and Planning and Reporting Estimates 1.

Table 1 shows that the mean frequencies of actual interactions following appropriate resident behavior in these three conditions were 8.60, 8.50, and 8.40; 19.42, 18.30, and 17.83, for CDW-1 and CDW-2, respectively.

In Planning and Reporting Estimates 1 both CDWs planned and reported more interactions following appropriate resident behavior than actually occurred. CDW-1 planned approximately 31 interactions each session, almost four times as many as occurred. CDW-2 planned approximately 33 interactions, almost twice as many as actually occurred. Both CDWs reported slightly less interactions than they planned.

When CDWs received feedback on the actual number of

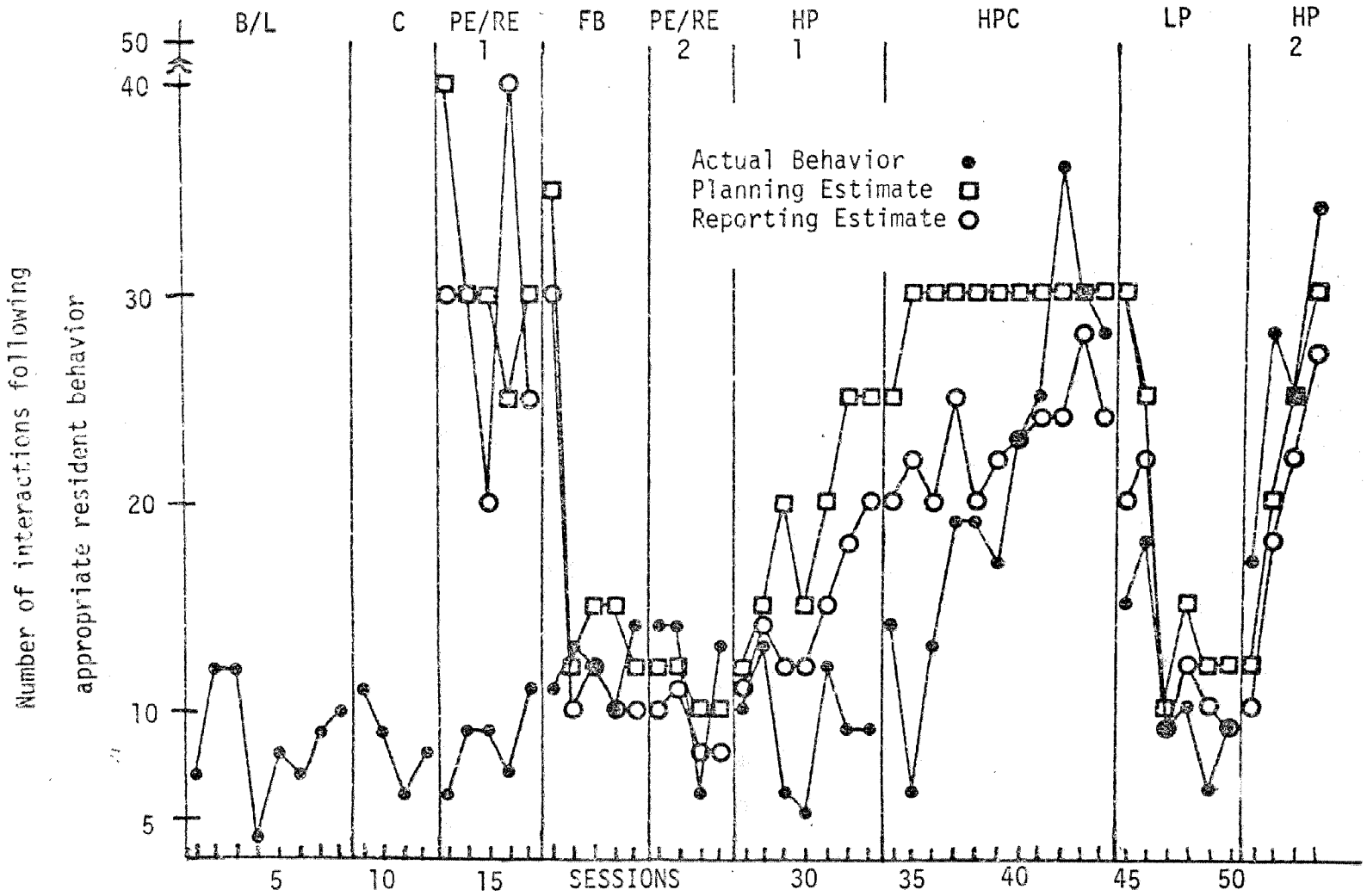

Figure 1. Frequencies of interactions following appropriate resident behaviors and of planning and reporting estimates of the frequencies of those interactions in each experimental condition for CDW-1.

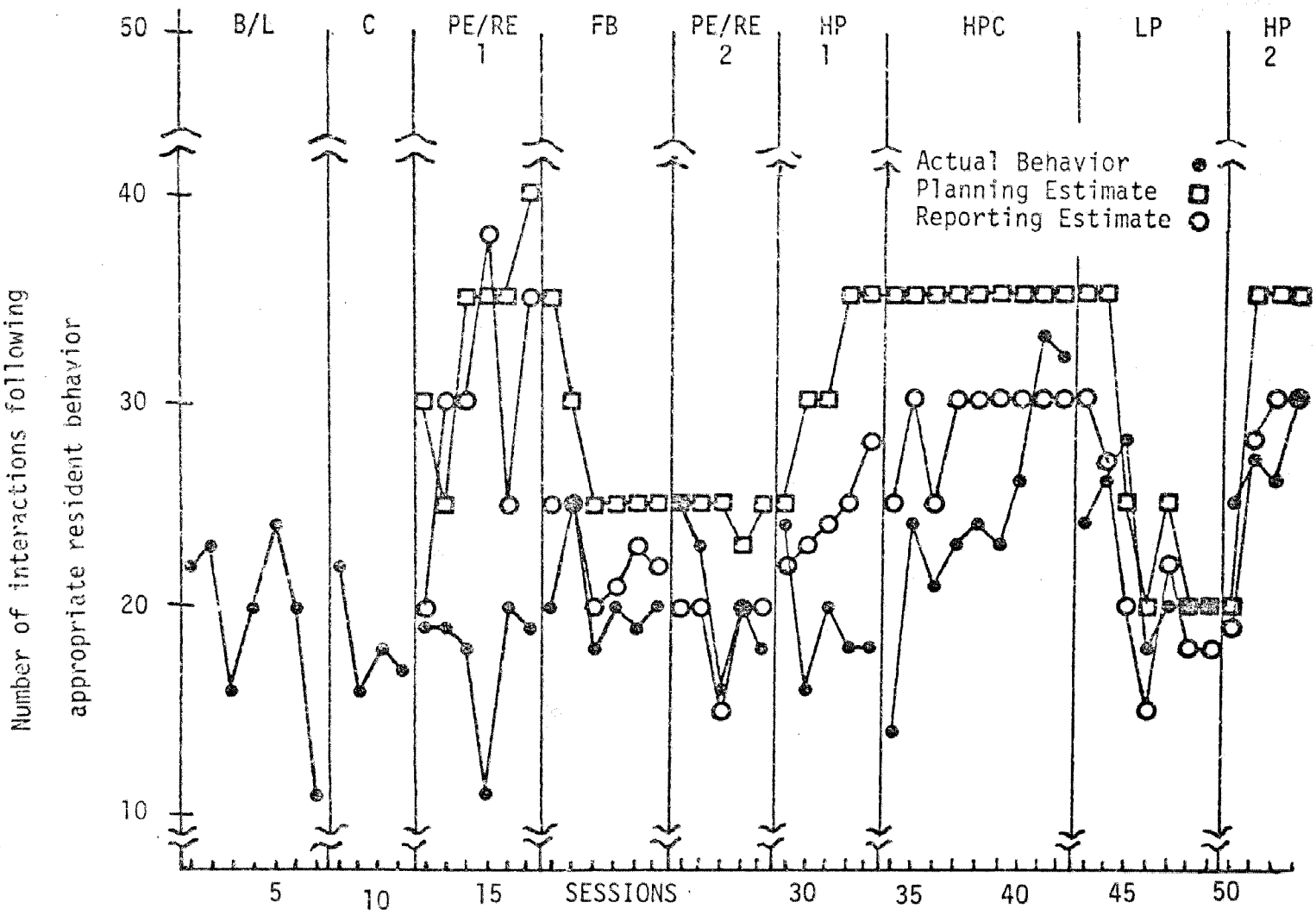

Figure 2. Frequencies of interactions following appropriate resident behaviors and of planning and reporting estimates of the frequencies of those interactions in each experimental condition for CDW-2.

Table 1

Mean frequencies of actual, planned, and reported interactions which followed appropriate resident behaviors in each experimental condition for CDW-1 and CDW-2

Experimental Conditions	CDW-1			CDW-2		
	Actual	Planned	Reported	Actual	Planned	Reported
Baseline	8.62			19.42		
Classifications	8.50			18.30		
Planning and Reporting Estimates 1	8.40	31.00	29.00	17.83	33.33	29.67
Feedback	12.00	17.80	14.40	20.33	27.50	22.67
Planning and Reporting Estimates 2	11.75	11.00	9.50	20.40	24.60	19.00
High Planning 1	9.14	18.85	14.28	19.20	31.00	24.40
Last 2 data points	9.00	25.00	19.00	18.00	35.00	26.50
High Planning and Correspondence	20.90	29.54	22.90	24.44	35.00	28.88
Last 2 data points	29.00	30.00	26.00	32.50	35.00	30.00
Low Planning	11.17	17.33	13.66	22.28	25.71	21.33
Last 2 data points	7.50	12.00	9.50	20.00	20.00	18.00
High Planning 2	26.00	21.75	19.25	26.25	26.25	22.25

their interactions which followed appropriate resident behavior, both CDWs showed a small increase in their mean frequency of actual interactions, and both CDWs showed a decrease in the mean frequency of both planned interactions and reported interactions. These changes were maintained in the subsequent condition, Planning and Reporting Estimates 2, when feedback was no longer available.

When CDWs were praised for high planning, interactions following appropriate resident behavior nearly returned to Baseline levels, 9.14 and 19.20 for CDW-1 and CDW-2, respectively, while planning estimates steadily increased to 25.00 and 35.00 for CDW-1 and CDW-2, respectively. Reporting estimates also gradually increased throughout the condition, although they were consistently lower than the planning estimates.

Figures 1 and 2 show that the frequency of planned interactions remained stable at 35 for CDW-2 and increased and then stabilized at 30 for CDW-1 when approval was contingent upon both high planning and correspondence between planned and actual frequencies. Frequencies of actual interactions following appropriate resident behavior for CDW-1 increased steadily in the High Planning and Correspondence condition to a mean frequency of 29.00 for the last two data points, approximately the same as planning estimates (30.00) and higher than the reporting estimates (26.00). The mean frequency for the last two data points of

actual interactions for CDW-2 was 32.50, approximately the same as the planning estimates (35.00) and slightly higher than the reporting estimates (30.00).

During the Low Planning condition both CDWs' actual interactions returned to Baseline. For CDW-1 the mean of the last two data points was 7.50, for CDW-2 the mean was 20.00. Planning and reporting estimates decreased to levels observed in Planning and Reporting Estimates 2. Figure 2 shows that the frequency of actual interactions for CDW-2 decreased on the first day of the Low Planning condition, but the planning estimate did not decrease until the third day of the condition.

When praise was then contingent upon high planning estimates only, the frequencies of actual interactions steadily increased for both CDWs toward those frequencies obtained in the High Planning and Correspondence condition. Similarly CDW-1 steadily increased both her planning estimates and reporting estimates, while CDW-2 immediately increased her planning estimates to those seen in the High Planning and Correspondence condition, and she steadily increased her reporting estimates.

As shown in Table 1 the mean frequency of reported interactions following appropriate resident behavior was always slightly less than the mean frequency of planned interactions. With the exception of Planning and Reporting Estimates 2 and High Planning 2, the mean frequency of

reported interactions was always higher than the mean frequency of the actual interactions. Looking at Figures 1 and 2 it can be seen that the reporting estimates were usually closer to the frequencies of the actual behavior than were the planning estimates. This relationship was evident in Planning and Reporting Estimates 1, even before any feedback on actual behavior was given.

Table 2 shows that in all conditions except Baseline, Classifications, and Feedback, the mean percentages of appropriate resident behaviors were approximately equal for both CDWs. Mean percentages of appropriate resident behavior were higher for CDW-1 in those three conditions. For CDW-1 the mean percentages of appropriate resident behaviors generally declined, and the mean percentages of inappropriate resident behaviors remained low but stable. For CDW-2 the mean percentages of appropriate resident behaviors stayed generally stable while mean percentages of inappropriate resident behaviors declined.

Table 2

Mean percent of observations resident behavior was either appropriate or inappropriate

	Experimental Conditions								
Staff	B/L	C	PE/RE 1	FB	PE/RE 2	HP 1	HPC	LP	HP 2
	Mean percentages of appropriate resident behavior*								
CDW-1	68.00	64.25	49.20	58.80	54.25	48.71	47.18	44.83	48.50
CDW-2	49.50	40.50	49.00	43.00	50.60	48.40	41.44	40.00	50.25
	Mean percentages of inappropriate resident behavior*								
CDW-1	3.50	6.25	4.50	3.60	6.75	3.14	2.36	2.16	1.00
CDW-2	14.00	9.00	9.33	7.16	7.80	10.60	5.88	6.85	1.50

*Mean percentages of appropriate and inappropriate resident behaviors plus mean percentages of neutral resident behaviors equal 100%.

Chapter 4

DISCUSSION

Supervisors can improve staff performance simply by verbally prompting and praising the staff for planning to do better, provided the staff have received training which develops correspondence between their verbal and their actual behavior.

In High Planning 1 manipulation of planning behavior alone did not produce a change in the actual behavior. In High Planning 2 manipulation of planning behavior alone was sufficient to produce a change in the actual behavior. This suggests that the immediate change in the CDWs' actual behavior seen during High Planning 2 was caused by one or both of the intervening conditions. The present design prevents precise isolation of the condition responsible, but the change in actual behavior produced by manipulation of planning behavior alone was also seen in the Low Planning condition. This lends strength to the assumption that some factor operating during the High Planning and Correspondence condition was responsible for producing subsequent changes in actual behavior solely through the manipulation of planning behavior.

These findings are consistent with Risley and Hart's work with preschool children. Initially the children showed no change in their play behaviors when receiving praise and

a snack for reporting they played with certain toys. But after a time of receiving praise and a snack for reporting only when they actually played with a toy (correspondence training), giving priase and snacks just for reporting play with a new toy was sufficient to increase subsequent actual play with that toy. Risley and Hart suggested the children were under the control of the stimulus of differential reinforcement for verbal behavior which occurred during previous sessions.

The CDWs were also under the control of the stimulus of differential reinforcement for their verbal behavior which occurred in previous sessions.

Tracing the development of the S^D, it can be seen that initially the CDWs' planning and reporting behaviors did not have much natural correspondence with actual behavior. That is, at the beginning of the study the CDWs could not predict or accurately report the frequency of their interactions with residents which followed appropriate resident behavior.

When the CDWs were given neutral feedback on their actual behavior, their actual behavior increased slightly and their verbal behavior decreased, much like student performance reported by Sowers (Note 1).

The constant relationship between the planning estimates and the reporting estimates and between the estimates and the actual behavior is similar to the relationships described by Sowers (Note 1) which exist between

planned, reported, and actual studying behaviors. She suggested they were caused by the students' histories of reinforcement which led them to "plan in order to increase future behavior and to tell the truth or not lie about what they did in the past."

Similar contingencies of reinforcement apparently effected the CDWs. These same contingencies produced a move toward correspondence between their planning and reporting estimates and their actual behavior which was maintained after feedback was withdrawn. However, the reinforcement inherent in matching their verbal behavior and their actual behavior during the Feedback condition was not sufficient to establish the planning estimate as a S^D for actual behavior in High Planning 1.

During the High Planning and Correspondence condition the observer's differential reinforcement of high planning was presented with differential reinforcement of correspondence. The increase in correspondence during the High Planning and Correspondence condition was gradual, similar to the gradual increase in a newly learned behavior. In the Low Planning condition the maintenance of correspondence may be a function of removing the reinforcement of high frequencies of actual behavior provided adventitiously during the High Planning and Correspondence condition. Or, following Risley and Hart, it may be a function of establishing differential reinforcement of the planning estimate

as the S^D for a particular frequency of actual behavior.

Each CDW's immediate change in actual behavior on the first day of both the Low Planning condition and High Planning 2 suggests that the S^D effecting the CDW's actual behavior was the differential reinforcement of the planning estimate. On the first day of each condition the planning estimate remained the same, but the observer's differential reinforcement for that planning estimate was changed; and subsequent to that change the actual behavior that day was different. CDW-2 did not change her planning estimate until the third day of the Low Planning condition, but the change in the differential reinforcement of the planning estimate had produced an immediate change in her actual behavior from the first day of the condition.

It might be argued that changes in CDW behavior reflect changes in the residents' behaviors: if the residents behave appropriately more frequently in some conditions, then the number of CDW interactions would have to follow appropriate behaviors more frequently in those conditions than in others. But since the residents did not behave better in the High Planning and Correspondence condition or in High Planning 2, this cannot account for the CDWs' data.

The lack of improvement in the percentage of resident behaviors which were appropriate, as shown in Table 2, may be partly due to the variety of activities

performed throughout the study. When residents gained proficiency in one activity, that activity was discontinued and another was started. Other factors effecting the variety of activities included the availability of materials and the scheduling of special events or parties on the living unit. This continual introduction of new activities may have hidden real improvement in appropriate resident behavior.

This apparent lack of improvement in appropriate resident behavior has an important implication for supervisors: supervisors should not expect change in the residents' performance to maintain appropriate staff behaviors. These appropriate staff behaviors must be maintained by supervisors.

In summary, the study showed that a supervisor of CDWs could effectively change the CDWs' actual behaviors through differential reinforcement of their verbal behavior provided correspondence between verbal and actual behavior had been established. Before correspondence was established the supervisor could change the verbal behavior, but this did not effect the CDWs' actual behavior.

Further study would be necessary to determine whether correspondence could be achieved more quickly if the CDWs already knew how to have high frequencies of interactions which followed appropriate resident behavior, and whether this shorter condition would effect the establishing of

differential reinforcement of planning behavior as the S^D for actual behavior.

Investigation should also be made of how long a single condition training correspondence would effect the CDWs' behaviors.

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